THE GENERIC RELATIONSHIP OF *SARACHA* AND *JALTOMATA* (SOLANACEAE; SOLANEAE)[1]

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The genus *Saracha* R. & P. has been confused with other genera in the tribe Solaneae, namely *Bellinia, Jaltomata, Poecilochroma, Hebecladus,* and *Dunalia.* This confusion has resulted from the misinterpretations of a complex nomenclatural history, and until recently (Gentry 1973, 1974) has not received serious attention. This paper elucidates the nomenclature of *Saracha* with respect to these genera. A key to *Saracha* and *Jaltomata* and some other closely related genera is included.

NOMENCLATURAL HISTORY

The original description of the genus *Saracha* R. & P. in the "Florae Peruvianae et Chilensis Prodromus" (1794) included a diagnosis of unique characters separating it from other genera in the family, but did not include the description of any species. In 1799, five species were described in the second volume of the "Florae Peruvianae et Chilensis". A comparison of the original description and plate of *Saracha,* and the description of these five species shows that the first described species, *S. punctata,* clearly typifies the genus. Morton (1938) and Gentry (1973, 1974) reached a similar conclusion.

Roemer and Schultes (1819) changed the name *Saracha* to *Bellinia.* This change was made in order to prevent confusion of *Saracha* R. & P. with the earlier genus *Saraca* L. (Caesalpiniaceae). I do not recognize *Saracha* R. & P. as a later homonym of *Saraca* L. and therefore, *Bellinia* is placed in synonymy with *Saracha.*

Similarly, Miers (1848) described the genus *Poecilochroma* with *Saracha punctata* R. & P. as its type. In 1853, Miers suppressed *Poecilochroma* and placed all the species into *Saracha,* but later (1857) he again changed his opinion, and preserved *Poecilochroma* as he had originally established it. Because *Poecilochroma* was based on the type of the genus *Saracha,* it is illegitimate and must be placed in synonymy.

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Further consideration was not given to *Saracha* until Macbride (1930, 1962) and Morton (1938) attempted to resolve the nomenclatural difficulties created by Miers. Both recognized that the establishment of *Poecilochroma* was erroneous. Nevertheless, Macbride (1930) suggested a continuation of Miers' nomenclature by applying the name *Saracha* to those species other than the type *S. punctata* R. & P., and implied that the latter was to serve as the type of *Poecilochroma.* Morton (1938) believed, ". . . both genera [were] relatively unimportant, [and] no great confusion would result from changes of name [in order to correct the nomenclature]," but concurred with Macbride by naming still another species, *Saracha confinis* Morton. Later, Macbride (1962) confused *Hebecladus* Miers with *Saracha* R. & P., but I consider the former a distinct genus, and regard it as a close relative of the non-typical species of *Saracha*.

The most recent treatment of *Saracha* was by De Rojas (1974). She placed *Poecilochroma* into synonymy with both *Saracha* R. & P. and *Dunalia* H. B. K. This placement of *Poecilochroma* with *Dunalia* by implication also places *Saracha* with *Dunalia* since *Poecilochroma* is based on the type of *Saracha.* Consideration of the type description (Humbolt, et al., 1818) and the plate (tab. CXCIV) suggests that *Saracha* and *Dunalia* are best treated as different genera.

The elucidation of the nomenclature now establishes the correct name for *Poecilochroma* as *Saracha,* and the correct name for those species believed to be atypical of *Saracha* R. & P. as *Jaltomata* Schlechtendal (Gentry, 1973).

In 1838, Schlechtendal described *Jaltomata* with one species, *J. edulis,* from Mexico. In 1839, he reduced the genus to synonymy with *Saracha,* and changed the epithet *edulis* to *jaltomata.* This procedure resulted in an illegitimate name when placed in synonymy with *Saracha.* I recognize *Jaltomata* as a distinct genus, and therefore *J. edulis* must serve as the type species.

Gentry (1973, 1974) also recognized the genus *Jaltomata* and transferred two species that were previously aligned with *Saracha* as *J. procumbens* (Cav.) Gentry and *J. confinis* (Morton) Gentry. Many species (ca. 60) have been described for *Saracha,* and preliminary evidence indicates most of these should be referred to *Jaltomata.* A biosystematic study of *Jaltomata* now in progress will

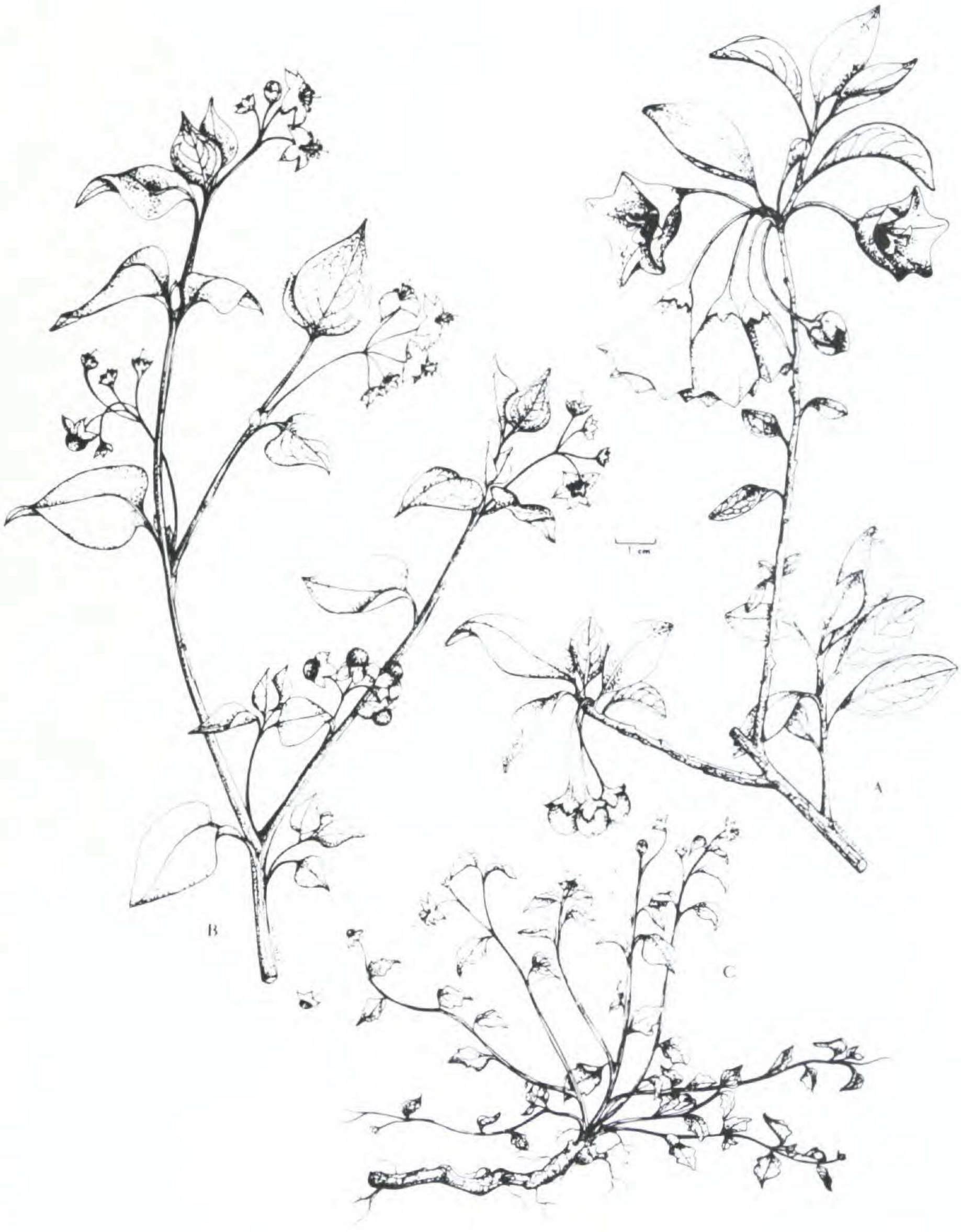

Figure 1. A. *Jaltomata procumbens* (Cav.) Gentry. B. *Saracha punctata* R. & P. C. *Jaltomata confinis* (Morton) Gentry. Note the different inflorescences and floral size and shape.

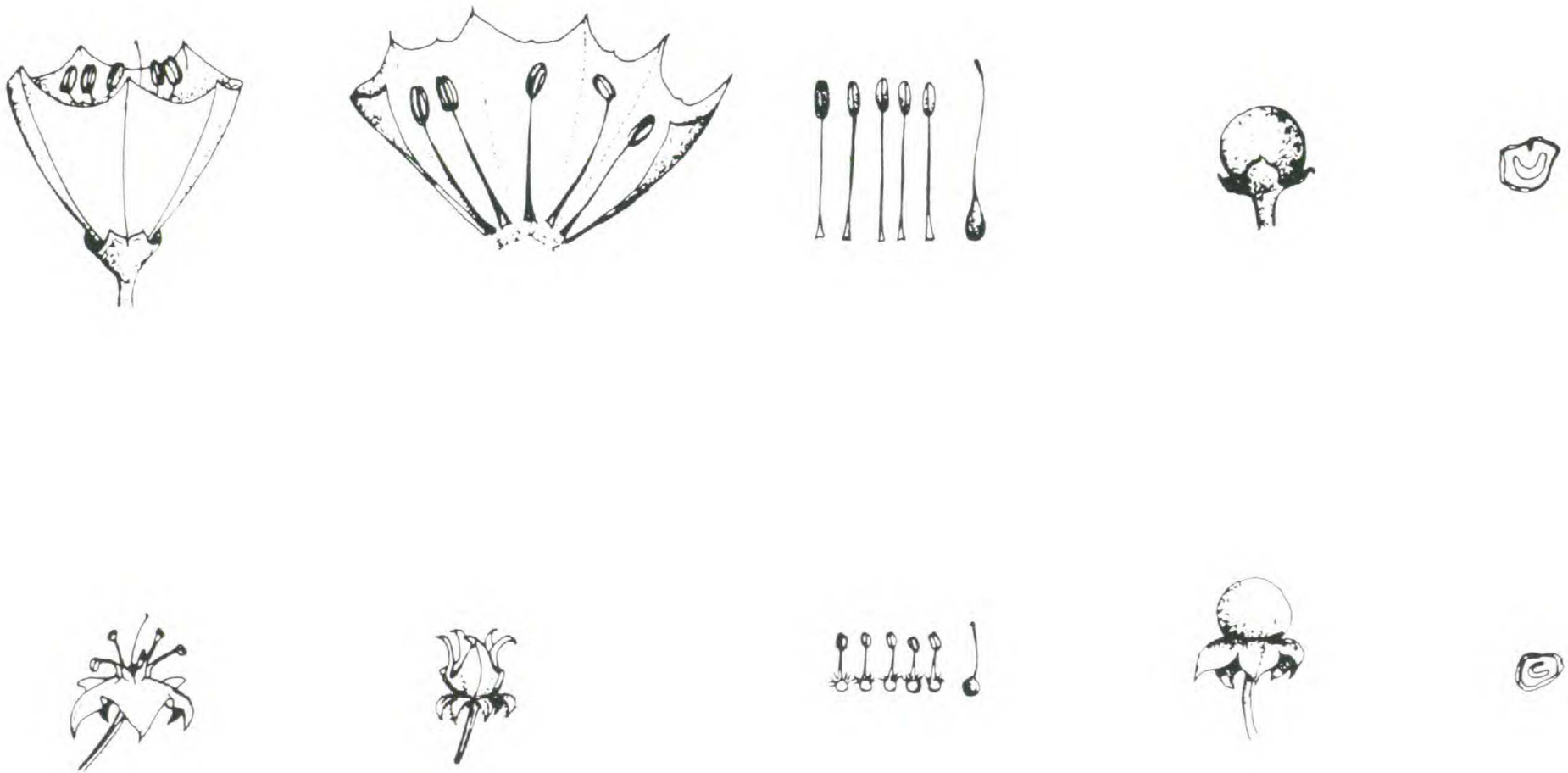

Figure 2. Comparative floral and fruiting calyx morphology. Top: *Saracha;* Bottom; *Jaltomata.*

provide further clarification of the species, and already *J. viscosa* D'Arcy & Davis has been published.

MORPHOLOGY

The delimitation of Solaneae genera based on floral and fruiting morphology has been well established (Miers, 1848; Macbride, 1930, 1962; Morton, 1938; Waterfall, 1958; Averett, 1973).

Saracha and *Jaltomata* are morphologically distinct (Figures 1 & 2). The former is a shrub or tree with thickened leaves, strongly campanulate flower and a berry that is subtended by an involute accrescent calyx. The latter is an herb with relatively thin membranous leaves and rotate corolla with strongly reflexed calyx that spreads beneath the flower and fruit.

A summary of the important morphological features which distinguish *Saracha* and *Jaltomata* and some related genera is presented in the key below.

KEY TO SARACHA AND JALTOMATA AND SOME CLOSELY RELATED GENERA

Anthers dehiscing through terminal pore ..... *Solanum*
Anthers not dehiscing through terminal pore,
  Herb; inflorescence a single, axile, umbel; fruiting calyx strongly reflexed, rotate and spreading beneath the berry,
    Flowers rotate ..... *Jaltomata*
    Flowers tubular ..... *Hebecladus*
  Tree or shrub; inflorescence axile, not umbellate; fruiting calyx accrescent neither strongly reflexed nor spreading beneath the berry; flowers campanulate ..... *Saracha*

TAXONOMY

Saracha Ruiz & Pavon. Florae Peruvianae et Chilensis Prodromus, p. 31, t. 34. 1794. *Sarachea* (sic) Anal. Fam. **24.** 1829. *Sarracha* (sic) Bull. Acad. Brux **12:** 133. 1845. *Sarachaea* (sic) O. Kuntze. Rev. Gen. Pl. **2:** 452. 1891. TYPE SPECIES: *Saracha punctata* Ruiz & Pavon. Florae Peruvianae et Chilensis **2:** 42, t. 178b. 1799.

Bellinia Roemer & Schultes. R. & S. Systema. Veg. **IV.** 687–690; LVI. 1819.
Diskion Rafinesque. Sylva Tell. **55:** 1838.
Poecilochroma Miers. Lond. J. Bot. **7:** 353. 1848.

Tree or shrub, perennial; stems erect, ascending, suffruticose, round, glabrous; leaves simple, opposite, rarely alternate, ovate to oblong, glabrous, prominently veined, petiolate, upright, dusty; flowers 2–7, axillary, pedicels elongating, calyx campanulate, rounded at base, glabrous; corolla variably with punctate markings, large 2–3 cm., campanulate, lacinate, ovate, acute, slightly reflexed at margin; stamens inserted at the base of the corolla, erect, expanding at the base; filaments to 2 cm. long; anthers longitudinally dehiscent; styles filiform; stigma capitate, obtuse; fruit a globose berry, fleshy, bilocular with an involute calyx, seeds flattened, reniform; embryo peripheral, curved around endosperm.

Saracha is restricted to the northwestern part of South America: Venezuela, Colombia, Ecuador, Peru, and Bolivia, in montane regions from 2500 to 4300 meters. Although habitat associations with *Adiantum*, *Ambrosia* and some Malvaceae have been reported, very little is known about the biology of this genus. A thorough study needs to be done.

Jaltomata Schlechtendal. Index Seminum Hort. Hal. **1838:** 8. 1838.

TYPE SPECIES: *J. edulis* Schlechtendal.

Jaltonia Steudel. Nom. Bot. ed. 2. **1:** 796. 1840.

Saracha sensu auct., non Ruiz and Pavon. Fl Peru. et. Chil. Pro. **31.** t. 34. 1794.

Herb; stems erect, ascending or spreading, glabrous to pubescent, angled, usually hollow; leaves simple, often thin, membranous, petiolate, ovate to acuminate, entire or broadly lobed; inflorescence solitary, axillary, and umbellate, situated at a dichotomy of the stem; flowers pedicillate with the calyx enclosing the bud, later spreading, becoming reflexed, subtending but not enclosing the fruit; corolla rotate to broadly campanulate, shallow to deeply lobed, laciniate, the lobes usually broad to deltoid; filaments exserted, filiform, and inserted near the base of the corolla, basally swollen, glabrous, style thin, stigma small; fruit globose, a mucilaginous berry; seeds few to numerous, laterally compressed, reniform, wavy-thick testa cell walls, browning with age; embryo peripherally curved around endosperm.

Jaltomata is a group of mostly perennial herbs ranging from the southwestern border of the United States to Bolivia. Annual members of the genus have been collected in the West Indies and

Galapagos Islands. *Jaltomata* occurs at lower elevations than *Saracha,* generally from near sea level to 3200 meters throughout its range.

These herbs have been collected from pine-oak forests, cafetales, and more disturbed sites such as river banks, perimeters of agricultural fields, and along roadsides. *Jaltomata* occurs with *Solanum, Physalis, Margaranthus, Chenopodium, Mentha,* and *Amsinckia. Solanum americanum* Mill. is the most consistent association with *Jaltomata.* A biosystematic study of the genus is now underway.

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